Appendix D: Wayfinding Protocol and Best Practices

Contents

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Introduction

This appendix provides guidance for establishing a comprehensive bicycle wayfinding system in Wichita, including current practice; future opportunities; policy and regulatory framework; sign types; sign components; and sign placement. In addition, this document also provides examples of best practices from Chicago and Seattle.

The Wichita Bicycle Master Plan recommends developing a bicycle network that consists of on- and off-street facility improvements on more than 420 miles of roadway, in addition to the more than 60 miles of existing bicycle facilities. In order to help ensure that the City realizes the maximum benefit from the proposed and existing facilities wayfinding signage could be utilized. Wayfinding signs prorovide multiple benefits, including but not limited to the following.

- They provide information ~~-~~about destinations, direction and distance to help bicyclists determine the best routes to take to major destinations.
- They provide ~~Signs~~ provide information that helps bicyclists understand and use the bicycle ~~on-street and -path~~network (including on-and off-street facilities) without the use of a map.
- Directional signs also provide additional messaging to motorists to expect bicycles on the roadway.
- The presence of signs encourages bicycling on designated corridors because users feel the signs will direct them to the best route for getting to their destination.

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Wichita ~~History and~~Current Practice

Bicycle signs have been installed in Wichita along some shared use paths. These signs designate the pathsas bicycle routes and help bicyclists identify preferred bicycle routes. Signs are generally installed during new shared use path construction.

Existing bike route sign in Wichita

~~**Wichita Application**~~

Wichita Bicycle Network Wayfinding Signage Opportunities

The City of Wichita may wish to consider installing two general categories of signed routes to work in unison and provide bicyclists with a navigable system along designated bicycle routes.

- Named Routes:
  - Paths such as the Arkansas River Bicycle Path
  - Recreational loops such as the loop utilizing the Zoo Blvd Path, Ark River Path, and Westdale Dr. A loop that combines path segments with on-street segments.
  - Bicycle Boulevards. An example might be Piatt Ave from 21st St to 2nd St .

- Un-named Network Routes:
  - Routes between destinations such as transit, schools, business districts, major employment centers, or major path access points.

The type and phasing of facility improvements may vary depending on a number of criteria, including expected user volumes, roadway constraints, vehicle volumes and speeds, feasibility, destinations served, and relative importance in the overall network. Wayfinding can be an important component of establishing the network, because in some cases wayfinding signage could be installed prior to additional recommended facility improvements.

The phasing of signing and other bicycle network improvements do not need to occur at the same time, because wayfinding signs may be used alone (i.e. signed route) or in combination with other treatments such as pavement markings (e.g. bike lanes and shared lane markings). For example, for some lower speed/lower volume roadways installation of wayfinding signage may proceed the striping of bike lanes, and in this sense could be used as an interim step toward implementing additional recommended treatments.

In addition, the City may find it makes sense in some cases to add additional signed routes to the bicycle network without installing a bike lane or shared lane marking. Any decision to do so may be based on the following criteria:

- Alternate routes parallel, and within close proximity (less than a half mile) to a route with bicycle facilities
- Lower volume streets
- Spur routes, or routesthat may span a relatively short distance and terminate at a specific destination or loop back into the main route

~~The Wichita Bicycle Network may consist of two general categories of signed routes:~~

- ~~Named Routes:~~
  - ~~Paths such as the Arkansas River Bicycle Path~~

- Recreational Loops such as the loop around the Sedgewick County Zoo includingWidmill Road. A loop that combines path segments with on-street segments.
- Bicycle Boulevards. An example might be 9th St and Murdock Ave between XX Path and Armour Ln.

- Un-named Network Routes:
  - Routes between destinations such as transit, schools, business districts, major employment centers, or major path access points.

The two route types will work in unison to provide bicyclists with a navigable system along designated bicycle routes.

Policy and Regulatory Framework

Standards and guidance for the use of signage for bicycle purposes is provided by the following documents:

Manual on Uniform Traffic Control Devices (MUTCD) Guidelines

The Manual on Uniform Traffic Control Devices (MUTCD 2009 edition) includes standards for:

- Sign design for directional bicycle signs;
- Sign installation such as minimum height of signs above ground and horizontal placement from edge of the roadway or path; and
- Symbols and appropriate abbreviations for destination names.

The most recent update to the MUTCD in 2009 introduces new sign types and provides additional right-of-way placement guidelines for directional signs.

American Association of State Highway and Transportation Officials (AASHTO) Guide for the Planning, Design and Operation of Bicycle Facilities

The AASHTO Guide provides supplemental information to the MUTCD. The guide explains the use and benefits of different sign types for bicycle wayfinding.

Americans with Disabilities Act (ADA) Guidelines

The ADA Standards fo Accessible Design offer guidance on sign assembly placement to maintain the proper vehtical and horizontal clearance for pedestrians. These guidelines will apply in locations where sign assemblies need to be placed adjacent to or in the sidewalk.

Sign Types

Bicycle route signs are signs that guide bicyclists along designated contiguous bikeways. The bikeways may consist of on- and/or off-street bicycle facilities. The signed bikeways create a bicycle route and a network of bicycle routes creates the bicycle route system. path

The bicycle route sign system, or wayfinding system, is the system of signing bikeways in a consistent, standardized fashion. Bicycle route sign systems are designed for bicyclists who are familiar with the city's landmarksand districts, but unfamiliar with the preferred route to their intended destination(s). The sign system provides bicyclists with direction, destination and distance information. Generally there are three different primary categories of signs ~~are~~ that can be provided ~~in order~~ to assist the bicyclist (listed below).

1. **Decisionand Spot DecisionSigns (D1):**at decision points where two or more routes intersect or where guidance is required
2. **Named Route Signs (M1):**along designated named routes
3. **Route Designation or Confirmation Signs (D11):**to confirm a route choiceand provide guidance at a turn in a route

2009 MUTCD Figure 9B-4

2009 MUTCD Figure 9B-4

2009 MUTCD Figure 9B-4

Decision Signs (D1-1c series)

Decision Ssigns indicate~~clude~~ direction, destination and distance (in miles) information. Decision signs mark decision points where two or more bicycle routes intersect. Decision signs are installed on the approach to an intersection. ~~Signs include direction, destination and distance (in miles) information.~~

Sign Placement in the Right-of-Way: Place 30+ feet on the approach to a decision point or intersection of another signed bicycle route. To allow for comfortable merging across travel lanes for left turns place the decision sign at the appropriate distance from the intersection based on the number of lanes that a bicyclists must merge across:

- No merge: 30 feet
- One lane merge: 100 feet
- Two lane merge: 200 feet

D1-1c sign assembly, Seattle Washington

Sign Specs: 36"X6", white on green and retro-reflective.

Sign Placement on Post: Directional sign organization at a given decision point will be based on the following guidelines:

1. Install D1-1c signs on the approach to intersections where signed routes intersect and where routes lead directly to the intended destination. The bicycle route system can connect business districts, schools, parks, neighborhoods and other important locations that are directly on designated routes.

2. The number of destinations provided on a given post is not to exceed three. This allows for proper vertical clearance to be maintained. Three signs per post is also about the maximum amount of information that can be read by a passing bicyclist.

3. The number of signs on a given post pointing in the same direction is not to exceed two. Limiting destinations to two in one direction is necessary to provide space for destinations in other directions, because this sign type will be installed at intersecting routes.

4. The sign with the nearest destination should go at the top of the assembly with the most distant destination at the bottom. If destinations are equal in distance, the sign with an up arrow should be placed on top. This arrangement allows for the nearest destination to "fall off" the top of the sign and subsequent destinations to move-up as the bicyclists approaches.

5. When directional blades are placed on named routes or they direct users directly to named routes, named route signs (M1-8a and supplementary signs) may be placed on the same sign post belowthe D1-1c sign(s). Placing multiple sign types on one post will reduce the number of posts used as well as provide all necessary information for bicyclists in one location.

Sign Content: Destination and directional information will be unique on most signs. Determining destinations is important to the function of the network. Distance information will be determined by the spacing of decision points and destination locations.

1. Identify and Rank Destinations:

    - Develop a list of all destinations and rank them in a hierarchy. For example:
        - Primary: paths, bridges, business districts, neighborhoods, regional parks, downtown
        - Secondary: Institutions, transit stations, other municipalities
        - Tertiary Destinations: other public institutions/facilities, airport, designated bicycle streets
    - The ranking will help determine the sign content at a given decision point within the network.

2. Provide distance measurements in tenth of a mile increments such as 4.3, 1.2. This allows for detailed destination information in denser urban areas. If mileage on a sign is a whole number, do not include the tenth mile placeholder. For example use "4" rather than "4.0"

3. If a bike route terminates at a location where there is no destination use the name of the final cross street or bike route as the destination.

2009 MUTCD Figure 9B-4

Directional Spot Signs (D1-1b series)

Spot signs are similar to directional signs but provide direction and destination information only. Use D1-1b signs when a destination is off the signed route or when getting to the route requires additional wayfinding. Spot signs may include the words "To" and "Via" where necessary and may vary in width to accommodate limited space in the right of way. Spot signs do not need to be followed by a confirmation sign.

Spot signs may be used where:

1. Guidance to signed bicycle routes from adjacent roadways, sidepaths etc. or access to important facilities such as a path is needed.
2. Guidance from signed bicycle routes when important destinations are a short distance off the signed route. In such cases, a directional sign may indicate the best access point from the signed route to the destination. Use additional spot signs to guide bicyclists to that destination.

Spot sign along bicycle route in Seattle.

Named Route Signs (M1-8 series)

A modified M1-8 sign indicating a turn in an on-street bicycle facility, Minneapolis

~~Install~~ The M1-8 or M1-8a signs are placed along named regional on-road routes and paths to assist users in wayfinding along named routes or to confirm that they ~~user is on the~~are traveling on the desired route. ~~Use~~ The M1-8 or M1-8a signs should be used with supplementary signs such as directional arrows (M5 and M6 series) and the words "North", "South", "East", "West", "To", "End", "Begin", etc. (M3, M4 series). The M1-8 series of signs are small in size and are a cost effective way to mark bicycle routes.

When using the M1-8 or M1-8a signs, there are pros and cons to the use of route numbers or route names. If a route already has a colloquial name, ~~use~~ the colloquial name should be used instead of what may appear to be an arbitrary route~~and not an arbitrary number~~. This will help ~~to~~ avoid confusion. If a colloquial name is not already utilized, then ~~R~~route names are

encouraged. Route names ~~because they~~ can often provide additional contextual information such as destination information i.e. Smith Street Bike Route will likely follow Smith Street and Smith Street passes by X, Y and Z
locations. Route numbers do not provide this context and require a bicyclist to look at a map to understand where the route goes. In areas where signed bike routes are dense, the use of numbers can be confusing because a bicyclist may have to ride on several numbered routes to get to a destination. Numbered routescan work well for cross jurisdiction travel, on routes that do not already have a colloquial name or on routes with many turns where a colloquial name is not clear. On an M1 sign, route numbers can be more visible than text from a distance.

2009 MUTCD Figure 9B-4

Sign Specs: Size: 12”X18”, white on green and retro-reflective. The letters on signs should be 2 to 1.5 high for best visibility.

Sign Placement in the Right-of-Way:

On-path M1-8 or M1-8a signs may be used:

1. At path entrances and exits
2. 30’-50’ after every controlled intersection or street crossing; or
3. Every ¼ mile to mile where there is a gap in signage. Spacing will depend on the density of the street network
4. At transitional locations (such as path-to-road transitions) or in cases where bicyclists will be transitioning to sidewalks

A modified M1-8a sign at the entrance to a shared use path.

On-street M1-8 or M1-8a signs may be placed:

5. 30+ feet before a turn with an M5 or M6 arrow (follow decision sign guidelines for placement at the approach to an intersection)
6. 30-60 feet after the turn to confirm the path
7. At decision points where needed
8. Within proximity to a named route (within a few blocks), similar to a spot sign. Named route signs can be used in conjunction with a supplementary sign such as an arrow and “To”. When farther than a few blocks off the designated route, decision signs can be used to direct users to named route

Sign placement on post:M1-8 or M1-8a signs can be mounted on the same post, below regulatory, warning or destination signs.

1. M1-8 or M1-8a signs may be placed back-to-back or back-to-back with regulatory or warning signs.
2. When multiple M1-8 or M1-8a signs are placed on the same post, they can be stacked depending on height and visibility. The current route should be the top sign.

Route Designation, Turn and Confirmation Signs (D11-1c series)

These signs confirm that a bicyclist is on the correct route.The sign is used in two ways:

1. Route Confirmation Sign: Signs are placed on the far side of an intersection following the directions indicated by decision signsand at intervals along the route to confirm that the bicyclist is still on the correct route.

2009 MUTCD Figure 9B-4

2. Turn Sign: at turns in a route with an arrow (M5 or M6 series sign). In this case D11-1c and an arrow sign are placed on the approach to an intersection.Confirmation signs will include destination information generally with the text “To” the location indicated on the directionalsign. When a confirmation sign is usedon a named route, an M1-8 or M1-8a sign may be placed below the confirmation sign.

Sign Specs:24”X18”, white on green and retro-reflective.

Street Name Signs

Install street name signs at path /roadway intersections. This helpspath users find path entrances and identify cross streets along paths. Placing bicycle and pedestrian ledgends on the path name sign indicates to motorists that the information on the sign can be disregarded.

A path name sign would be added to street name sign assemblies at intersections of paths and roadways

Supplemental Signs

Supplemental signs provide additional information to D11-1 or M1 series signs. Cardinal direction signs (M3 series) and alternate route signs (M4 series) are placed above the M1 series. Arrow signs in the M5 and M6 series are placed below D11-1 and M1 signs to provide directional information.

2009 MUTCD Figure 9B-4

General Sign Components

The following guidelines outline general rules for the signs

1. For all signs use upper and lower case letters
2. Use Clearview Series C font. This differs from Colorado Department of Transportation standards and is approved for use by the Federal Highway Administration.It strikes a balance between visibility and maximum characters per sign.
3. Use two-inch high capital letters. This size is visible from approximately 80 feet
4. For destination names that are too long to fit on one line, use intuitive abbreviations
5. Do not use periods in the abbreviations of destination names
6. Avoid the use of diagonal arrows when possible
7. Use graffiti film on bicycle route signs that are lower to the ground, particularly on paths. This will increase the longevity of the signs.

Sign Placement Guidance

Guidance on signage placement is important to providing a legible sign system. Predictable and uniform placement of directional signs at traffic controlled intersections and at intervals helps to provide proper guidance particularly if a turn in a route is to occur.

For bicyclists, a good baseline distance required to read a sign and determine an action is 30 feet from the intersection. Additional engineering judgment is required when placing directional signs to allow for visibility of the sign with parking and vegetation and other possible obstructions.

Roadways

Turn Signs:

1. Follow placement guidelines for decision signs.

Confirmation Signs:

2. 30-60 feet on the far side of the intersection after decision points, preferably within sight of the decisionsign.
3. 30-60 feet after stop controlled or signalized intersections.
4. Or after every 1/4 mile to mile of unsigned segment along designated on-street routes depending on the density of the street grid.

Figure 9B-6 from the 2009 MUTCD provides general lateral placement of D1-1 and D11-1 signs at an intersection.

Sign content:

1. If there are two destinations in one direction, a confirmation sign may include two lines of text. This may require reduction of the bicycle symbol.

Sign mounting height is also outlined in the MUTCD (section 2A.18), however, due to speed andsight line differences between bicyclists and motor vehicles, minimum post heights are recommended for bicycle signs.

Mounting height guidance:

1. Sidewalk Clearance: 7 feet of clearance from the bottom of the sign to the ground should be allowed. If there are multiple signs per post, and the lowest sign is lower than 7 feet, the lowest

sign cannot stick-out more than 4 inches into the sidewalk. If bicycles use the sidewalk the clearance height should be 8 feet.

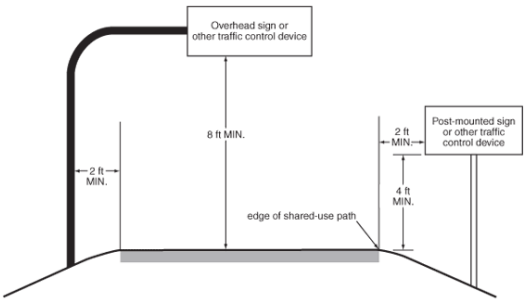
2. If there is no sidewalk and few obstructions such as parked cars, optimum vertical height for bicycle signs is 7 feet from the bottom of the sign.

Shared Use Paths

Horizontal, lateral and vertical installation of bicycle signs differs for shared-use paths and roadways. For paths follow lateral and vertical sign placement guidelines in the MUTCD guidelines for signs placed along shared-use paths (Figure 9B-1):

1. 8 foot minimum vertical clearance
2. 2 foot clearance from edge of path to edge of sign
3. 4 foot minimum distance between ground and bottom edge of sign

Figure 9B-1. Sign Placement on Shared-Use Paths



2009 MUTCD Figure 9B-1

~~Signing of the Bicycle Network~~

~~The Wichita Bicycle Master Planrecommends a bicycle network that consists of improvements on over 420 miles of roadway. The type and phasing of improvements may vary depending on a number of criteria, including expected user volumes, roadway constraints, vehicle volumes and speeds, feasibility, destinations served, and relative importance in the overall network. Wayfinding is an important component of establishing the network. Wayfinding signs may be used alone, i.e. signed route, or in combination with other treatments such as pavement markings (e.g. bike lanes and shared lane markings). The phasing of signing and other bicycle network improvements do not need to occur at the same time. For example, for some lower speed/lower volume roadways installation of wayfinding signage may proceed the striping of bike lanes, and in this sense could be used as an interim step toward implementing additional recommended treatments. The network consists of several signed routes that have no pavement markings, and over time, the city may find it makes sense to add additional signed routes to the network. The decision to develop a signed route versus installing a bike lane or shared lane marking may be based on the following criteria:~~

- ~~Alternate routes parallel, and within close proximity (less than a half mile) to a route with bicycle facilities~~
- ~~Lower volume streets~~
- ~~Spur routes, or routesthat may span a relatively short distance and terminate at a specific destination or loop back into the main route~~

Best Practices

The cities of Chicago and Seattle provide examples of best practices for bicycle wayfinding. Below are descriptions of their wayfinding systems.

Chicago

The City of Chicago has implemented an extensive directional sign system for bicycles using destination-based signage for the on-street bicycle network. The MUTCD D11-1c and D1-1c series signs were developed by the City of Chicago in an effort to consolidate the amount of signage required by the 2003 MUTCD for bicycle wayfinding using the D11-1, D1-1 and supplemental signs. The D11-1c provides specific destination information, such as "To Evanston" in lieu of the general "BIKE ROUTE" text of the D11-1 sign. This is helpful in distinguishing different routes in a dense bicycle route network. The D11-1c is used by the City of Chicago as a confirmation sign to confirm a route

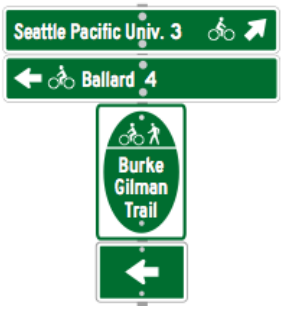
2003 MUTCD guidelines for directional bicycle signs. Right: Chicago developed the D1-1c sign to consolidate direction, destination and distance information onto one sign.

selection. The sign is to be place on the far side of an intersection after a route choice had been made. The D1-1c consolidates direction, destination and distance information onto one small sign. Several D1-1c signs can be installed together at the approach to a decision point to provide information on multiple routes. The D11-1c and the D1-1c were developed by the City ofChicago and later incorporated into the 2009 edition of the MUTCD.

Decision signs preceding an intersecting signed bike route in Chicago.

Seattle

The city of Seattle also has a directional sign system for bicycles. Modeled after the Chicago system, the Seattle system also uses the D11-1c and D1-1c series of signs. Because Seattle has an extensive off street path system, additional signs were required to distinguish named routes. The M1-8 series of signs are used in Seattle to mark named routes. These signs are installed along named routes with supplementary signs from the M2, M3, M4, M5 and M6 series. M1 signs are also installed at decision points on paths with D1-1c or D11-1csigns (see figure).



Decision and named route signs from Seattle. On paths, both sign types are used to mark the route and provide direction to destinations on and off the path.

Many of Seattle's paths are named. In order to include the colloquial route name on the M1-8a sign, adjustments were made to the sign. The route number was replaced with route name within the main body of the sign. The space at the top of the sign was used

for a logo. This complete sign system helps bicyclists get to destinations throughout the city and provides guidance to and along named bicycle routes.

~~Wichita Application~~

~~The Wichita Bicycle Network may consist of two general categories of signed routes:~~

- ~~Named Routes:~~
  - ~~Paths such as the Arkansas River Bicycle Path~~
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  - ~~Bicycle Boulevards. An example might be 9th St and Murdock Ave between XX Path and Armour Ln.~~

- ~~Un-named Network Routes:~~
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